

REMARKS

Claims 1-20 remain in the application and are presented for examination and reconsideration. Claims 11-20 have been withdrawn from consideration.

**REJECTION UNDER 35 U.S.C. 102(b)/35 U.S.C. 103(a)
OVER RAMASWAMY (U.S. PATENT NO. 5,023,103)**

The Examiner has rejected Claims 1-10, under 35 U.S.C. 102(b) as anticipated by, or under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 5,023,103 to Ramaswamy (herein the '103 patent). Applicants respectfully traverse these rejections for the following reasons.

The Examiner has stated that the '103 patent discloses the treatment of bleached oat hull fibers with an acid to produce dietary fibers that are thereby neutralized. Applicants agree with the Examiner's statement. However, Applicants do not agree with the Examiner's further statements that the '103 patent, "teaches the same ratio of cellulose/hemicellulose as claimed," by Applicants. For this, the Examiner directs attention to column 5, lines 12-18, of the '103 patent. In the very next sentence of the Action, the Examiner states, less positively that the '103 patent discloses fibers that, "seem to be the same." These statements indicate the Examiner's uncertainty as to the specific nature of the fibers of the '103 patent.

Applicants note the Examiner's direction of attention to column 5, lines 40-44, of the '103 patent, regarding treatment of bleached oat hull fibers with an acid. It should be clearly understood that the use of the acid in the '103 patent is carried out in a manner and for a purpose that completely differ from Applicant's claimed use of acid.

The '103 patent states, with no uncertainty, at lines 40-44, of column 5, that the bleached fibers are neutralized. There is nothing to indicate that the acid treatment reduces lignin content of the fiber. To the contrary, as indicated in the claims of the '103 patent, as well as at column 4, lines 50-55, and at column 6, lines 32-38, lignin content reduction is not caused by acid treatment. At each of the foregoing portions of the '103 patent, it is stated that the aqueous, alkaline digestion process of the '103 patent produces fibers that have less than 1% lignin, or in some instances substantially all the lignin is removed. There is nothing that indicates acid need or should be used to reduce the lignin content. Moreover, there may be no content of lignin to be removed from the fibers, following the aqueous, alkaline digestion process used in the '103 patent.

To the contrary, Applicants must use acid to reduce lignin content of a seed based fiber, and this is recited in the claims of the present application. Accordingly, this is a difference from the teachings of the '103 patent.

Regardless of the apparent differences in the methods of producing the products, the Examiner contends that the products of the '103 patent and those of the present invention have, "the same ratio of cellulose/hemicellulose," and, "seems to be the same". The process of the '103 patent is an aqueous, alkaline digestion at elevated temperature and pressure, whereas Applicant's process is an acid treatment. Without question, the processes of the '103 patent and the present application are different.

With respect to the products of Applicants' claimed invention, as set forth in the claims, the products are fibers that are acid treated to reduce lignin content and that have a cellulose content of at least 50% and a total hemicellulose content of at least 5%. Applicants contend there is no disclosure of Applicants' claimed products in the '103 patent. Neither is there any basis upon which one of ordinary skill in the art would conclude that the '103 patent teaches products having the same ratio of cellulose/hemicellulose, or products that seem to be the same as the products of the presently claimed invention.

In this regard, the Examiner has directed Applicants' attention to column 5, lines 12-18 of the '103 patent. Here is described a digested fiber, before bleaching and acid neutralization, that contains 0.4-0.7% lignin and 1.3-1.5% silica. Also stated is the content of hemicellulose, at 11-13%. The only other component is said to be dietary fiber in an amount of 92-95%. There is no disclosure of cellulose content. Since there is no disclosure or suggestion of cellulose content of the digested fiber, and since the digested fiber is produced by an aqueous, alkaline digestion process, Applicants contend there is no reasonable basis for the Examiner's statement that the products of the '103 patent and those of Applicants' invention either have the same ratio of cellulose/hemicellulose or seem to be the same.

There is not provided at column 5, lines 12-18, of the '103 patent, any definition of the term, dietary fiber. In the abstract the terms, dietary fiber and total dietary fiber are used interchangeably, without offering any definition. It is only in the Background of the Invention, at column 1, lines 8-15, of the '103 patent, that any light is shed upon the meaning of the term, dietary fiber. There, the term, total dietary fiber, which was earlier in the abstract used interchangeably with the term, dietary fiber, is defined. It is stated that total dietary fiber includes cellulose, hemicellulose, pectins, gums, lignin and mucelagenous material.

Accordingly, while cellulose is included in dietary fiber, cellulose is not the sole component. In the absence of any specific disclosure or suggestion as to the cellulose content of the dietary fiber component of the digested fiber, at column 5, lines 12-18 of the '103 patent, it is impossible for one of ordinary skill to understand what, if any, proportion of the dietary fiber is cellulose. Therefore, from the disclosure at column 5, lines 12-18 of the '103 patent, there is no reasonable basis for the Examiner's conclusion that the products of the '103 patent either have the same cellulose/hemicellulose ratio or seem to be the same as, the products of Applicants' invention.

Another possibility for determining the ratio of cellulose/hemicellulose of a product of the '103 patent involved reproducing Example 1 of the '103 patent. At column 6, lines 17-19, of the '103 patent, there was provided a partial description of the product of Example 1, but without any description of either cellulose or hemicellulose contents.

A review of Example 1 of the '103 patent caused the inventors of the present application to become sceptical that any solid product would be obtained upon reproducing Example 1. This belief was a result of the severity of the conditions of the aqueous alkaline digestion process used in Example 1. However, to end the speculation, and to attempt to determine the cellulose/hemicellulose ratio of the product of Example 1, it was decided to reproduce Example 1. Under the direct and immediate supervision of Kevin R. Anderson, a co-inventor of the present application, Mr. J. Steinke reproduced Example 1 of the '103 patent.

The reproduction of Example 1 of the '103 patent, and the observations concerning the reproduction are fully detailed in the enclosed Declaration Under 37 C.F.R. 1.132 of Mr. Kevin R. Anderson. In brief, the process of Example 1 was duplicated as closely as possible. At the end of the procedure, it was concluded that no solid fiber could be obtained.

In the absence of any solid fiber, there was no possibility for determining a cellulose/hemicellulose ratio of the product of Example 1 of the '103 patent. This result confirmed the expectation of the inventors that no product would be obtained from an example utilizing such a severe aqueous alkaline digestion process.

Therefore, without any basis provided by the '103 patent for concluding that the products would either have the same cellulose/hemicellulose ratio, or seem to be the same, as the products of Applicants' claimed invention, Applicants believe that the rejections of claims 1-10, under 35 U.S.C. 102(b) and 35 U.S.C. 103(a), over U.S. Patent No. 5,023,103

(Ramaswamy) are unjustified. Accordingly, Applicants respectfully request the Examiner to withdraw the rejections of claims 1-10, under 35 U.S.C. 102(b) and 35 U.S.C. 103(a), over U.S. Patent No. 5,023,103.

REJECTION UNDER 35 U.S.C. 102(b)/35 U.S.C. 103(a)
OVER KINSLEY (U.S. Patent No. 4,557,800)

The Examiner has rejected claims 1-10, under 35 U.S.C. 102(b) as anticipated by or under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 4,557,800 to Kinsley (herein the '800 patent). Applicants respectfully traverse these rejections for the following reasons.

The Examiner has stated that the '800 patent discloses a cellulosic pulp that is treated to reduce lignin content, and points to column 2, lines 17-31, and column 7, lines 3-17. Applicants have reviewed the cited portions of the '800 patent and have found no disclosures regarding any treatment to reduce lignin content.

Further, the Examiner has stated that the '800 patent, "seems to show a fiber which is at least substantially similar to the ones claimed," in the present application. Applicants contend that this statement is not supported by the teachings of the '800 patent, and that, contrary to the Examiner's statement, the fibers of the '800 patent are not similar, let alone, substantially similar, to the acid treated seed based fibers having a cellulose content of at least 50% and a hemicellulose content of at least 5%, that are claimed in Applicants' invention.

In more detail, the '800 patent relates to a process for forming a cellulosic, non-binding pulp that is useful in producing high bulk, high porosity, fibrous cellulosic substrates. The process is a thermal treatment of a cellulosic pulp that comprises contacting the pulp with a non-oxidizing gaseous medium at a temperature of at least about 400° F. for at least 3 seconds. As shown in the '800 patent, any source of pulp may be treated. This treatment process is not in any way related to the claims of Applicants' invention. Applicants do not thermally treat a cellulosic pulp fiber to reduce the fiber hygroscopicity, as is set forth at column 3, lines 1-3, of the '800 patent.

In one aspect of the process of the '800 patent, it is stated, at column 2, lines 24-31, that when the cellulosic pulp that is treated is a wood cellulose pulp, or any other cellulose comprising at least about 10% hemicellulose, a pulp is obtained that is suitable for the production of a cellulosic substrate that will comprise at least 10% hemicellulose. Applicants note that while the '800 patent suggests the possibility of using cellulose comprising at least

about 10% hemicellulose other than wood cellulose, there is no disclosure or suggestion of any such other cellulose in the '800 patent.

The emphasis of the '800 patent is clearly directed to the treatment of cellulosic pulp derived from woods such as hardwoods and softwoods. For example, at column 4, lines 45-50, the inventive process of the '800 patent is said to be particularly applicable to cellulosic pulps suitable for forming paper substrates. These include sulfite and sulfate (kraft) pulps derived mainly from softwoods.

Further, in this regard, the Examiner's attention is called to column 6, lines 9-20, of the '800 patent. The '800 patent, at this point, states that a novel cellulosic pulp is provided upon thermally treating a wood cellulose pulp that is a pulp containing at least about 10% hemicellulose. Moreover, it is further stated that the product obtained when a wood cellulose pulp is treated is a pulp containing at least about 10% by weight hemicellulose, that is, the minimal amount of hemicellulose generally found in wood cellulose.

In view of all of the foregoing, Applicants point out that the '800 patent can only be reasonably construed as disclosing the treatment of cellulosic pulps having at least about 10% hemicellulose in those instances where the cellulosic pulp is a wood pulp. This is also consistent with claim 32 of the '800 patent. There is no disclosure or suggestion, in the '800 patent, of any other cellulosic pulp that contains at least about 10% hemicellulose.

Applicants' claimed invention is completely different from the disclosure of the '800 patent. For example, there is nothing in Applicants' presently claimed invention that relates to use of a process for thermally treating a cellulosic pulp by contacting a pulp with a non-oxidizing gaseous medium at a temperature of at least about 400° F. The '800 patent requires use of the thermal process to achieve the intended product properties. As clearly stated in the '800 patent, as, for example, at column 3, lines 1-20, and at column 7, lines 3-17, the purpose of thermal treatment is to reduce the fiber hygroscopicity. The present invention is not related to this technology in any manner.

The present invention relates to an acid treated seed based fiber that has a specified level of cellulose of at least 50%, and a specified level of hemicellulose, of at least 5%. The definition of a seed based fiber is found at page 4, lines 6-8, of the present application. A seed based fiber is defined as a non-wood fiber obtained from plants. It is to be noted that the seed based fiber is a non-wood fiber. This is different from the '800 patent that discloses

products that are cellulosic substrates containing at least about 10% hemicellulose, but only where a wood cellulose pulp is thermally treated by the process of the '800 patent.

It is well known by those of ordinary skill in the art that non-wood fibers that are required for use in Applicants' claimed invention, are not similar to wood fibers that are disclosed in the '800 patent. In support of this statement there is enclosed a copy of a publication presented at the 1998 Proceedings of the Korean Society of Wood Science and Technology Annual Meeting. The publication by James S. Han is entitled "Properties of Nonwood Fibers." The publication was co-sponsored by the United States Department of Agriculture (USDA) Forest Service.

In the publication, at page 3, in the Introduction, it is stated that, in general, fibers can be classified into three categories, wood, non-wood, and non-plant. As stated, the term non-wood was utilized to distinguish plant fibers from main sources of wood fibers. Table 1 of the publication sets forth chemical compositions of common non-wood fibers compared to wood fiber. On page 8 of the publication, in section 3, physical properties, it is pointed out that a notable physical difference between wood and non-wood fiber is that non-wood fibers are formed in aggregates or bundles. The fiber aggregates are polymers, with a single fiber unit representing the basic building block of the polymer.

From the foregoing, Applicants contend that wood fibers are clearly different from non-wood fibers. The chemical compositions and the physical properties of the wood fibers differ from those of non-wood fibers. Thus, it would not be obvious for one of ordinary skill in the art to regard wood fibers as being interchangeable with non-wood fibers. With the above in mind, Applicants contend that the '800 patent does not disclose a fiber that is, or that seems to be, at least substantially similar to the acid treated non-wood fibers having at least 50% cellulose and at least 5% hemicellulose, that are claimed in Applicants' present application. The disclosure of the '800 patent that relates to materials containing at least 10% hemicellulose, is directed to wood cellulose pulp, that is said at column 6, lines 9-21, of the '800 patent, to be the minimal amount of hemicellulose generally found in wood cellulose. There is nothing in the '800 patent that discloses or suggests which pulp, other than a wood cellulose pulp can be treated, if it is desired to produce a product having at least 10% hemicellulose.

In view of the foregoing, Applicants contend that claims 1-10 are neither anticipated by, under 35 U.S.C. 102(b), nor obvious, under 35 U.S.C. 103(a), over U.S. Patent No.

4,557,800 to Kinsley. Accordingly, the Examiner is respectfully requested to withdraw the rejections of claim 1-10, under 35 U.S.C. 102(b) or 35 U.S.C. 103(a), over U.S. Patent No. 4,557,800.

CONCLUSION

Applicants believe the application is in condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the rejections of claims 1-10, for all the reasons set forth in the Remarks, the enclosed Declaration Under 37 C.F.R. 1.132, and the enclosed copy of the publication entitled "Properties of Nonwood Fibers." Applicants submit that claims 1-10 are patentable, and respectfully request the Examiner to pass the application to issue.

Respectfully submitted,

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